

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**WILDLIFE WATERING FACILITY**

(No.)

**CODE 648**

**DEFINITION**

Develop, improve, or modify watering places and systems for wildlife.

Methods used will be designed to protect the soil resource from erosion.

**PURPOSE**

To provide adequate drinking water, during critical periods, for wildlife.

Design shall be sized to accommodate the expected and/or anticipated consumptive rates of target and non-target species.

To create or expand suitable habitat for wildlife.

Facilities shall be protected from livestock damage. All livestock should be excluded from wildlife water developments by fencing, unless the development is a livestock watering development modified for wildlife use. Above ground facilities should be camouflaged or screened to reduce damage from vandalism.

To improve water quality and accessibility for wildlife.

**CONDITIONS WHERE THIS PRACTICE APPLIES**

In areas where new, additional, or improved watering places are needed to increase the range, distribution, improve the habitat of, or attract wildlife by meeting their water requirements.

The facility must provide permanent, accessible, dependable, and suitable quality water for the critical period.

Where lack of adequate water has been identified as the limiting habitat component.

The distribution and spacing of facilities shall be based on topography, required travel distance to water and the home range, territory size, and distribution of the target species.

This practice has general applicability in the dryland farming, rangeland and arid areas of California where (1) naturally occurring water is not available for wildlife during significant parts of the year, and (2) where existing ponds, springs, or troughs don't supply the need, or (3) where these practices are not feasible to develop or are not otherwise desired.

Ramps shall be installed in open water troughs and tanks when necessary for wildlife access escape.

Design shall include appropriate safety features to minimize the hazards of the facility.

Management measures shall be provided to control invasive species and noxious weeds.

Facilities shall be designed and installed in compliance with all State and federal laws including water rights and permits if needed.

**CRITERIA**

General Criteria Applicable to All Purposes

Because each facility is unique to species, habitat, topography, and climate; watering facilities must be planned and installed according to a plan and adapted to the specific site.

Disturbed areas shall be vegetated according to a revegetation plan using native plant materials, where feasible, otherwise using other compatible species. Disturbed areas may be protected from erosion with weed free mulch if appropriate.

### Additional Criteria to Provide Drinking Water for Wildlife

California quail need about 15 grams or a little less than one-half ounce of water a day, and depending upon the length of the dry season, up to three quarts per year. Chukar utilize at least twice as much as quail. Quail and chukar start using free water, as apposed to water obtained from vegetation, as soon as the succulent vegetation dries up in the warm weather of summer, and they continue to utilize it until green feed is again available. Free water may be provided by mourning dew, fog, springs, seeps, streams, guzzlers or other watering devices.

### Typical wildlife water use:

Antelope	1-2 gal/animal/day
Mule deer	1-2 gal/animal/day
Elk	5-8 gal/animal/day
Chukar	750 gal/covey/year
Quail	750 gal/covey/year
Wild turkey	500 gal/flock/year
Pheasant	2-5 gal/day yearlong
Mourning dove	2-5 gal/day yearlong
Songbirds	1-2 gal/day yearlong

### Site Spacing

1. Wildlife watering facilities may be provided if:  
(a) The range of the desired species of wildlife might be extended by providing additional water developments; (b) present population densities of the desired species can be increased by further water development; or (c) new habitat can be created.

2. The distance the desired species will travel for water is the main criteria that should be used for spacing of wildlife watering facilities.

a. California quail - The suggested spacing pattern for California quail is at least one installation per 160 acres. Water should be located one to two miles apart on California quail ranges. Water should be placed at one-half mile intervals for optimum utilization.

b. Mountain quail and chukar - Water should be available at about two mile intervals in mountain quail and chukar range, however, the type of terrain, feed and cover may alter the necessary distribution of water for good coverage of the area.

c. Gambel's and desert quail - Less conclusive evidence is available on the summer radius of Gambel's or desert quail, but from data based on field observations, it is thought that watering sites should be available at intervals of three to five miles.

4. The following is an estimate of distance some wildlife will travel to water:

Species	Optimum (Miles)	Maximum (Miles)
Antelope	2	3
Mule deer	1	3
Elk	1	3
Chukar	1	2
Mountain quail	1	2
California quail	0.5	1
Gambel's quail	1	4
Desert quail	1	4
Pheasant	0.5	1
Turkey	1	2
Mourning dove	3	5
Songbirds	0.25	0.5

### Site Location

1. The site chosen for wildlife watering development or gallinaceous guzzler should serve as a covey center. Escape cover must be provided adjacent to the water. A clump (5 or more plants) of gooseberry, wild rose, mesquite, quailbush, scrub oak or other shrubs furnishes favorable escape, forage and loafing cover near the installation and increases its effectiveness as a covey center. Brush piles can be used for temporary cover until vegetation can be established at the site. If quail roosting cover is limited, a site within 100 to 200 yards of a good roost tree is desirable. Chukars roost in the open on the ground.

2. An abundant food supply must be present and the necessity for water in the area should be positively established. The area should be thoroughly checked for permanent water, however, one should remember a small amount of water is sufficient if it is permanent.

3. If possible, guzzlers should be located where excavation work and maintenance can be easily accomplished. A gentle slope for soil surface type water collecting aprons is desirable. Do not locate the guzzler where silt or debris laden floodwater will flow into the tank, or in heavy cover where leaves from trees too close to the installation will fill the collecting basin.

4. If water is to be hauled to a storage tank, it must be located near an access road.

#### Water Storage Tank Capacity

The recommended size of a water storage tank for a guzzler can be estimated by the minimum average rainfall, as follows:

<u>Minimum Average Rainfall</u>	<u>Tank Storage Capacity Required</u>
10 inches or over	500 gallons
5-10 inches	750 gallons

#### Water Collecting Apron

A water collecting apron can be used to fill and maintain water in a guzzler tank (see attached drawing). The size of the water collecting apron is determined by the least annual rainfall on record for the site, and the tank storage capacity. Use the following formula in making this determination for circular, rectangular, or metal roof-type aprons.

A. Size (radius) of circular collecting apron:

$$r = \frac{(8 \text{ feet}/100 \text{ gallons})g}{a}$$

WHERE: r = radius in feet, a = least annual rainfall in inches, and g = size of tank in gallons.)

FOR EXAMPLE:

1. For a 500 gallon tank

$$r = \frac{40}{a} \text{ feet}$$

2. For 750 gallon tank

$$r = \frac{60}{a} \text{ feet}$$

B. Area of rectangular collecting apron:

$$A = \frac{(316 \text{ SF}/100 \text{ gal})g}{a}$$

WHERE: A = area in square feet, a = least annual rainfall in inches, and g = size of tank in gallons.)

FOR EXAMPLE:

1. For 500 gallon tank in 10 inch ppt zone.

$$A = \frac{1580}{10} \text{ square feet} = 158 \text{ SF}$$

2. For 750 gallon tank in 10 inch ppt zone.

$$A = \frac{2370}{10} \text{ square feet} = 237 \text{ SF}$$

C. Standard 16x16 foot metal collecting apron will supply:

A 500 gallon tank in 6 inches or more annual rainfall

A 750 gallon tank in 9 inches or more annual rainfall, or

A 1000 gallon tank in 12 inches or more annual rainfall

#### Temporary guzzlers

Temporary "guzzlers" can be created by modifying barrels and filling them as needed with water hauled to the site. A fifty-five gallon steel drum can be connected by pipe to a small basin at ground level (see attached drawing). Water flow is regulated by atmospheric pressure or a float valve. Barrels should not contain any residue of contaminant harmful to wildlife.

### **CONSIDERATIONS**

#### General Considerations

All life must have water in some form for survival. Many mammals and birds must fulfill their water requirements from free water, green forage or from moisture deposited by dew or fog on suitable surfaces, such as plant leaves. When these sources of water are not available, wildlife must shift to watered areas or perish.

There are many areas in California that have all the necessary habitat elements present to support good

coveys of quail, chukars or other game birds, and other wildlife, except that water is lacking during the hot summer months.

The availability of well-spaced, permanent summer water is of paramount importance to many young animals. Adults may travel considerable distances for drinking water, or to feed on succulent late summer annuals, but young often must have open water near where they are hatched or born. The use of supplementary water thus assures that more of the annual production of young will survive.

Consider the effects on the target species and the ecosystem by concentrated grazing, predation, hunting etc.

Consider any effects upon natural springs and associated unique flora and fauna.

Consider the aesthetics of the installation. Visual impacts of metal or concrete collecting aprons can be reduced by the use of paints or dyes to reduce contrast. Vegetative plantings can be used to screen the facility in addition to providing food and/or cover for desired wildlife species.

The principal types of WILDLIFE WATERING FACILITY developments for providing water for upland wildlife are:

1. Gallinaceous guzzlers
2. Big game guzzlers
3. Spring and seep developments
4. Drinking and escape ramps in stock troughs
5. Drip valves in pipelines
6. Float or vacuum valve controlled drinking basins

As mentioned earlier other types of practices can also provide drinking water for wildlife. These include: POND, SPRING DEVELOPMENTS, TROUGH OR TANK, or WELL. They are typically developed for livestock use but can also be used by or developed for wildlife. For example, a pond can be developed for wildlife, or a wildlife watering facility at a livestock watering development can consist of a small basin supplied with water from the stock tank.

#### Water Quantity Considerations

Consider the effects on downstream flows or groundwater that could affect other water users or

associated aquatic sites. This practice has a minor effect on the quantity of surface and ground water

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Effects on downstream flows or aquifers that could affect other water uses or users.

#### Water Quality Considerations

Consider the effects on wetlands or other aquatic sites.

Consider the existence and maintenance of suitable water quality for the target species.

This practice may be a wetland, pothole, pond, spring development, tank, or pool. The primary use is to provide water for wildlife consumption. The effects on the quality of surface and ground water will be the same as these types of practices.

1. Effects on erosion and the movement of sediment, and soluble and sediment-attached substances that would be carried by runoff.
2. Effects on the movement of dissolved substances to ground water.
3. Effects on wetlands or water-related wildlife habitats.

#### Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will

not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

## PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended use.

Spacing of water facilities, construction details, and methods of protection shall be specified.

Installation plans, drawings, and site specifications shall be reviewed by a NRCS Biologist prior to installation.

### Designs Available

Wildlife water facility design and construction details are illustrated by standard drawings on the following job sheets:

7-L-14000-95 - Prefabricated metal water collecting apron for wildlife watering facility.

7-L-14000-97 - Temporary wildlife watering facility

7-L-14000-98 - Corrugated metal self-filling wildlife watering facility

7-L-14000-99 - Concrete self-filling wildlife watering facility

7-L-14000-100 - Wildlife watering facility near spring box No. 1, No. 2

7-L-14000-101 - Wildlife watering facility near stock trough No. 1, No. 2

## OPERATION AND MAINTENANCE

An operation and maintenance plan must be prepared by the designer for use by the owner or others responsible for operating this practice. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damaged components.

Facilities shall be checked periodically to insure proper function. Repair and maintain as needed.

Inspect the area adjacent to the facility to make sure the area is well protected with desirable vegetation and not subject to erosion or deposition. Correct as needed.

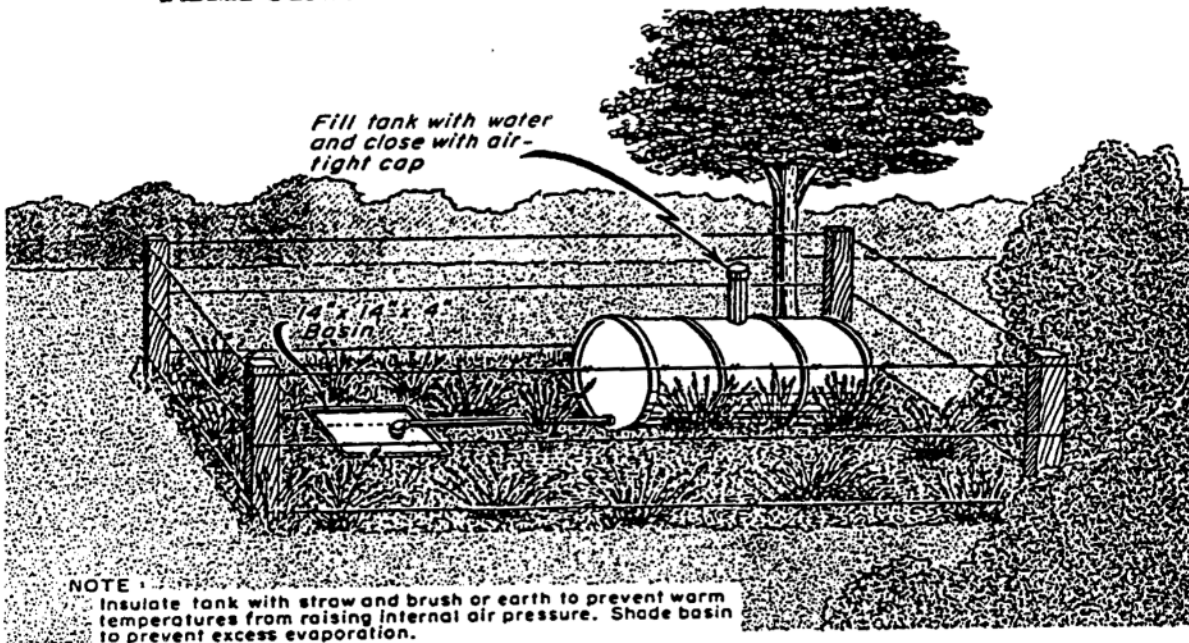
Facilities not designed to withstand or operate during freezing weather shall be winterized prior to winter conditions.

Periodically monitor water quality to insure acceptable water quality. Maintain as needed.

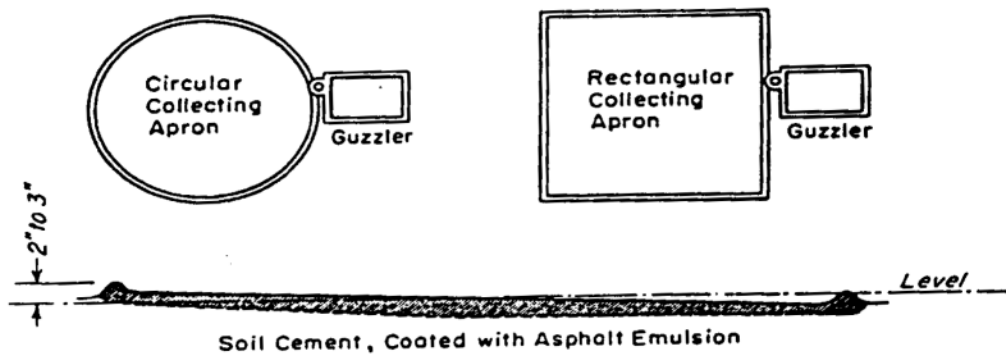




## TEMPORARY WILDLIFE WATERING FACILITY



## WATER COLLECTING APRONS FOR SELF-FILLING WILDLIFE WATERING FACILITY



- To Make Apron:
- (1) Shape and smooth area.
  - (2) Cover evenly with dry cement at rate of 1 sack for each 50 square feet, except on heavy clay soils, where use 1 sack for each 30 square feet.
  - (3) Rake in thoroughly 2 1/2 - 3 inches.
  - (4) Sprinkle thoroughly till soil is wet 6 inches deep.
  - (5) Paint or spray with asphalt emulsion as soon as possible after cement is set - always within 24 hours.